

The *Gleichenias* are not utilized in Hawaii in any way. The *uluhi* is eaten by cattle and goats, in the absence of more desirable forage. The petioles, if properly gathered and prepared, would undoubtedly be excellent material for the manufacture of light basketry. At present *uluhi* is an undeveloped resource.

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BRYOLOGICAL NOTES

IV. A NEW HYBRID IN *PHYSCOMITRIUM*

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Begun in the fall of 1912 and resumed in the spring of 1913, a considerable reclamation project was carried out in Ithaca, N. Y., as a result of which a tract of cat-tail marsh at the head of Cayuga Lake was converted into something more nearly approaching *terra firma*. The new soil was a very fine silt pumped from the Inlet by suction-dredge. Among the bryophytes which immediately established themselves upon it, *Physcomitrium* species were especially well represented. Material collected in the autumn of 1913 shows abundance of *Physcomitrella patens* (Hedw.) Br. & Sch. together with some *Aphanorhegma serratum* Sull. and *Physcomitrium immersum* Sull. Occasionally also a strange emergent capsule was noted, not identifiable with any moss-species, but obviously a hybrid. These capsules were not well matured and were so sporadic in occurrence that it was difficult to collect satisfactory material for their study, but finally at a point where the more clayey soil of the hillside projected out into the new silt covering they were found in greater number. At this point were found the following spring (1914) capsules of *Physcomitrium turbinatum* (Michx.) Brid. together with those of *Physcomitrium Hookeri* Hampe.* The ♀ parent of the hybrid was clearly *Physcomitrella patens*, the ♂ parent was evidently *Physcomitrium turbinatum*. The description follows, the sporophyte alone partaking of the hybrid nature, the gametophyte

* The station for *P. Hookeri* is, so far as I know, the first east of Ohio.

upon which it occurs being of course that of *Physcomitrella patens*:

Physcomitrella patens ♀ × *Physcomitrium turbinatum* ♂. Sporophyte altogether about 2.5 mm. high, the capsule exerted upon a seta longer than itself. Vaginule swollen at base, abruptly contracting to the base of the seta; the latter strongly pigmented dark brown in its lower $\frac{1}{4}$ - $\frac{1}{3}$, above green, about 1.25 mm. to the base of capsule. Capsule pyriform with neck fairly long and contracting gradually into seta, about twice as high (1 mm.) as wide, blunt at apex, light yellow in its immature condition. Stomata rather few at base of capsule, of normal *Funariaceae* type with completely coalesced guard-cells, pigmented yellow, nearly round, about $35\ \mu$ in diameter. Exothecial cells nearly rectangular to slightly pentagonal or hexagonal, arranged in definite latitudinal zones, thin-walled, about twice as long as wide ($50 \times 25\ \mu$), lid not clearly separated, but exothecial cells in upper part of capsule somewhat abruptly shortening, so that their length does not exceed their width, also slightly thicker-walled and more strongly pigmented yellow. Spores formed, but entirely immature.

As the material was collected in November shortly before the breaking of winter, and *Physcomitrella patens* is apparently an annual, it is rather doubtful if any of the hybrid capsules matured their spores, and unfortunately no attempt was made to mature them indoors. The whole matter of moss-hybrids is relatively uninvestigated. They have been noted most frequently, in fact almost exclusively, in Europe, whose moss-flora has been more intensively studied. Even there the only cases of hybrids which are well substantiated are those between cleistocarpous forms with sessile capsule and the related forms with seta and more highly organized capsule, the intermediate capsule being in these cases distinct enough to readily attract attention. Such hybrids have been described in the series *Pleuridium-Ditrichum*, *Astomum-Weisia-Trichostomum* and *Physcomitrella-Aphanorhegma-Physcomitrium*. Whether the hybrid spores can produce new plants and what the nature of such plants might be is, so far as I am aware, entirely unknown, so that speculation as to what

part hybridization may have played in the evolution of new moss-species is at present premature.

The hybrid which stands nearest to the one described above is *Aphanorhegma serratum* ♀ × *Physcomitrium turbinatum* ♂ described by Mrs. Britton from Drummond's specimens collected near St. Louis.* Mrs. Britton also refers to the European *Physcomitrella patens* ♀ × *Physcomitrium sphaericum* ♂, called *Physcomitrella Hampei* by Limpricht (1885). It seems a question whether the series of forms within which hybridization very certainly occurs should not be regarded as falling within a single natural genus, and I should be inclined to so include *Physcomitrella* and *Aphanorhegma* within *Physcomitrium*, over which name *Gymnostomum* has priority, as Lindberg insisted.

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A NEW VARIETY OF RUBUS PARVIFLORUS

BY J. K. HENRY

RUBUS PARVIFLORUS Nutt. var. **Fraserianus** var. n.

Distinguished from the species by having the petals laciniate-dentate on their outer half. Ucluelet, Vancouver Island, B. C.; June 19, 1917, J. K. Henry; June 20, 1917, George Fraser. These collections were made on both sides of Ucluelet harbor, but Mr. Fraser, who directed my attention to this unusual form, informed me that it is not common. As the plant has leaves rather densely pilose beneath and the lower part of the sepals hardly glandular, it might be considered a variety of *Rubus velutinus* H. & A. (*R. Nutkanus* Moc. var. *velutinus* Brewer), but it does not seem advisable to maintain two species. The

* Bull. Torrey Club, XXII, 65 f. 1895. The differences between *Physcomitrella patens*, a plant of the three northern continents, and *Aphanorhegma serratum*—which is peculiar to North America, are well brought out by Mrs. Britton in the same volume, pp. 62 ff. with plates 229, 230. My observations are entirely in agreement with her results, except that I find no incipient differentiation of a lid in either European or American *Physcomitrella* and I do not find its stomata at all immersed, but quite normal.